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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR		ATTORNEY DOCKET NO.
09/456,306	12/08/99	DUSCH	N	PM-265182

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EXAMINER	
STEADMAN, D.	
ART UNIT	**PAPER NUMBER**
1652	9

DATE MAILED: 03/30/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	09/456,306	DUSCH ET AL.	
	Examiner	Art Unit	
	David J. Steadman	1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-33* is/are pending in the application.

4a) Of the above claim(s) *24-33* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15)☒ Notice of References Cited (PTO-892)
16)☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
18)☐ Interview Summary (PTO-413) Paper No(s). _____ .
19)☐ Notice of Informal Patent Application (PTO-152)
20)☐ Other: .

DETAILED ACTION

Status of the Application

Claims 17-33 are pending.

Applicants' election without traverse of Group I, claims 17-23 in Paper No. 8, filed 03/15/01 is acknowledged.

Claims 24-33 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 8.

Drawings

1. The drawings are objected to by the Examiner. See the "Notice of Draftsperson's Patent Drawing Review" (Form PTO 948) for details. Direct any inquiries concerning drawing review to the Drawing Review Branch (703) 305-8404.

Specification/Informalities

2. The specification is objected to because of the following informalities: there is a large blank section at pages 2 and 22 and Figure 1 appears to labeled in German instead of English.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 22 and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Regarding claim 22, parts (ii) and (iii), the phrase "at least one sequence" renders the claim vague and confusing because it is unclear how a nucleic acid can have more than one nucleotide sequence. It is suggested that the term be replaced with "a sequence".

5. The term "corresponds to the sequence (i) within the degeneration range of the genetic code" in claim 22, part (ii) is unclear and confusing. The term "corresponds to the sequences (i) within the degeneration region of the genetic code" is not defined by the claim nor the specification and the meaning of this term is unclear. It is suggested that the language "corresponds to the sequence (i) within the degeneration range of the genetic code" be replaced with a term that has a more clearly identifiable meaning, for example, "is a degenerate variant of SEQ ID NO:1" or "encodes the amino acid sequence of SEQ ID NO:2".

6. Claim 22, part (iii) is indefinite in the recitation of "hybridizes" as this term is unclear absent a statement of the conditions under which the hybridization reaction is preformed. Nucleic acids which will hybridize under some hybridization conditions will not necessarily hybridize under different conditions.

7. Claim 22, part (iv) is rejected because of the recitation of "functionally neutral sense mutations" as it is unclear from the claim as written as to the function of the nucleic acid sequence shown in SEQ ID NO:1. It is suggested that Applicants clearly define their intended function of the nucleic acid of SEQ ID NO:1.

8. Claim 23 is confusing in that it is unclear as to the specific polynucleotide contained within the vector of the deposited microoganism (i.e., is the vector limited to the vector in the deposited microorganism or to any vector containing the polynucleotide of claim 17?).

9. Claim 23 is confusing in the recitation of "a vector... ...deposited in E. coli DSM 13114." Microorganisms are usually deposited instead of vectors. Applicant should clarify the meaning of the term "a vector... ...deposited in E. coli DSM 13114."

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claims 17-19, 22, and 23 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 17 (claims 18-19 and 23 dependent thereon) and 22 are directed to a genus of DNA molecules having at least 15 successive bases of a polynucleotide which is at least 70 % identical to a polynucleotide that encodes a polypeptide having the amino acid sequence of SEQ ID NO:2, a polynucleotide that encodes a polypeptide which contains an amino acid sequence that is at least 70 % identical to the amino acid sequence of SEQ ID NO:2, complements thereof (claim 17), or degenerate or functional variants thereof (claim 22). The specification does not contain any disclosure of the function of all DNA sequences that have at least 15 successive bases of a polynucleotide which is at least 70 % identical to a polynucleotide that encodes a

polypeptide having the amino acid sequence of SEQ ID NO:2, a polynucleotide that encodes a polypeptide which contains an amino acid sequence that is at least 70 % identical to the amino acid sequence of SEQ ID NO:2, complements thereof, or degenerate or functional variants thereof. The genus of nucleic acids that comprise the above described polynucleotides is a large variable genus with the potentiality of encoding many different proteins. Therefore, many functionally unrelated DNAs are encompassed within the scope of these claims, including partial DNA sequences. The specification discloses only a single species of the claimed genus which is insufficient to put one of skill in the art in possession of the attributes and features of all species within the claimed genus. Therefore, one skilled in the art cannot reasonably conclude that the applicant had possession of the claimed invention at the time the instant application was filed.

11. Claims 17-19, 22, and 23 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the polynucleotide of SEQ ID NO:1, does not reasonably provide enablement for a polynucleotide containing at least 15 successive bases of a polynucleotide which is at least 70 % identical to a polynucleotide that encodes a polypeptide having the amino acid sequence of SEQ ID NO:2, a polynucleotide that encodes a polypeptide which contains an amino acid sequence that is at least 70 % identical to the amino acid sequence of SEQ ID NO:2, or complements thereof (claim 17) or degenerate or functional variants thereof (claim 22). The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

Claims 17 (claims 18-19 and 23 dependent thereon) and 22 are so broad as to encompass any polynucleotide containing at least 15 successive bases of a polynucleotide which is at least

70 % identical to a polynucleotide that encodes a polypeptide having the amino acid sequence of SEQ ID NO:2, a polynucleotide that encodes a polypeptide which contains an amino acid sequence that is at least 70 % identical to the amino acid sequence of SEQ ID NO:2, or complements thereof or degenerate or functional variants thereof. The scope of the claims is not commensurate with the enablement provided by the disclosure with regard to the extremely large number of polynucleotides broadly encompassed by the claims. Since the amino acid sequence of a polypeptide determines its structural and functional properties, predictability of which changes can be tolerated in a polypeptide's amino acid sequence and obtain the desired activity requires a knowledge of and guidance with regard to which amino acids in the polypeptide's sequence, if any, are tolerant of modification and which are conserved (i.e. expectedly intolerant to modification), and detailed knowledge of the ways in which the polypeptide's structure relates to its function. However, in this case the disclosure is limited to polynucleotides of SEQ ID NO:1 and the amino acid sequences encoded thereby, i.e., products of the poxB gene.

While recombinant and mutagenesis techniques are known, it is not routine in the art to screen for multiple substitutions or multiple modifications, as encompassed by the instant claims, and the positions within a polynucleotide's sequence where nucleic acid modifications can be made with a reasonable expectation of success in obtaining the desired activity/utility are limited in any polynucleotide and the result of such modifications is unpredictable. In addition, one skilled in the art would expect any tolerance to modification for a given polynucleotide to diminish with each further and additional modification, e.g. multiple substitutions.

The specification does not support the broad scope of the claims which encompass all any polynucleotide containing at least 15 successive bases of a polynucleotide which is at least 70 %

identical to a polynucleotide that encodes a polypeptide having the amino acid sequence of SEQ ID NO:2, a polynucleotide that encodes a polypeptide which contains an amino acid sequence that is at least 70 % identical to the amino acid sequence of SEQ ID NO:2, or complements thereof or degenerate or functional variants thereof because the specification does not establish: (A) regions of the encoded protein's structure which may be modified without effecting the activity of the poxB gene product; (B) the general tolerance of the poxB gene product to modification and extent of such tolerance; (C) a rational and predictable scheme for modifying any amino acid residues of the poxB gene product with an expectation of obtaining the desired biological function; and (D) the specification provides insufficient guidance as to which of the essentially infinite possible choices is likely to be successful.

Thus, applicants have not provided sufficient guidance to enable one of ordinary skill in the art to make and use the claimed invention in a manner reasonably correlated with the scope of the claims broadly including any number of nucleic acid modifications of SEQ ID NO:1. The scope of the claims must bear a reasonable correlation with the scope of enablement (In re Fisher, 166 USPQ 19 24 (CCPA 1970)). Without sufficient guidance, determination of having the desired biological characteristics is unpredictable and the experimentation left to those skilled in the art is unnecessarily, and improperly, extensive and undue. See In re Wands 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir, 1988).

12. Claim 23 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The invention appears to employ a novel vector. Since the vector is essential to the claimed

invention, it must be obtainable by a repeatable method set forth in the specification or otherwise be readily available to the public. The claimed plasmid sequence is not fully disclosed, nor have all the sequences required for their construction been shown to be publicly known and freely available. The enablement requirements of 35 U.S.C. § 112 may be satisfied by a deposit of the plasmid. The specification does not disclose a repeatable process to obtain the vector and it is not apparent if the DNA sequence is readily available to the public. Accordingly, it is deemed that a deposit of the plasmid should have been made in accordance with 37 CFR 1.801-1.809.

It is noted that applicants have deposited the organism (*E. coli* DSM 13114) but there is no indication in the specification as to public availability. If the deposit was made under the terms of the Budapest Treaty, then an affidavit or declaration by applicants, or a statement by an attorney of record over his or her signature and registration number, stating that the specific strain has been deposited under the Budapest Treaty and that the strain will be irrevocably and without restriction or condition released to the public upon the issuance of the patent, would satisfy the deposit requirement made herein.

If the deposit has not been made under the Budapest treaty, then in order to certify that the deposit meets the criteria set forth in 37 CFR 1.801-1.809, applicants may provide assurance or compliance by an affidavit or declaration, or by a statement by an attorney of record over his or her signature and registration number, showing that:

1. during the pendency of this application , access to the invention will be afforded to the Commissioner upon request;

2. all restrictions upon availability to the public will be irrevocably removed upon granting of the patent;

3. the deposit will be maintained in a public repository for a period of 30 years or 5 years after the last request or for the effective life of the patent, whichever is longer; and

4. the deposit will be replaced if it should ever become inviable.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 17-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Redenbach et al. (Mol Microbiol 21:77-96). Claims 17-18 are drawn to a polynucleotide selected from: a) a polynucleotide which is at least 70 % identical to a polynucleotide encoding SEQ ID NO:2; b) a polynucleotide which encodes polypeptide which contains an amino acid sequence which is at least 70 % identical to SEQ ID NO:2; c) a polynucleotide which is complementary to a) or b); and d) a polynucleotide containin at least 15 successive bases of a), b), or c) (claim 17), and optionally, wherein the polynucleotide is a replicable DNA (claim 18), and optionally wherein the polynucleotide is an RNA (claim 19). Redenbach et al. teach a polynucleotide isolated from *Streptomyces coelicolor* that is 100 % identical to nucleotides 1735-1750 of SEQ ID NO:1 (see sequence comparison) inserted into a cosmid vector (p 78, under *Construction of a cosmid library and the generation of sublibraries*). Redenbach et al. further teach the use of the cosmids for production of radiolabeled RNA (p 78 under *Alignment of cosmids*). This anticipates claims 17-19 as written.

14. No claim is in condition for allowance.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Steadman, whose telephone number is (703) 308-3934. The examiner can normally be reached Monday-Friday from 8:00 am to 4:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapura Achutamurthy, can be reached at (703) 308-3804. The FAX number for this Art Unit is (703) 308-4242. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Art Unit receptionist whose telephone number is (703) 308-0196.

David J. Steadman

REBECCA E. PROUTY
PRIMARY EXAMINER
GROUP ~~1800~~ 1600